

# Appomattox River TMDL Development

11/06/03



# Bacterial TMDL Development

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- Source Assessment
  - Bacterial Source Tracking
- Modeling
  - Hydrology
  - Water Quality
- Allocation



# Source Assessment

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Process of quantifying all major sources producing bacteria and determining delivery mechanism carrying bacteria to stream.

Quantification and delivery mechanisms

- Permitted discharges
- Human
- Pets
- Livestock
- Wildlife



# Bacterial Source Tracking

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Method of analyzing fecal bacteria in water samples to determine their source (*e.g.*, human, pets, livestock, or wildlife).

- Known source collection
- Water sample collection
- Lab analysis
- Statistical analysis
- Results



# Modeling

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Establishes relationship between source loadings and in-stream water quality.

- Model set-up
- Critical period analysis
- Calibration
  - Hydrology
  - Water quality



# Allocation

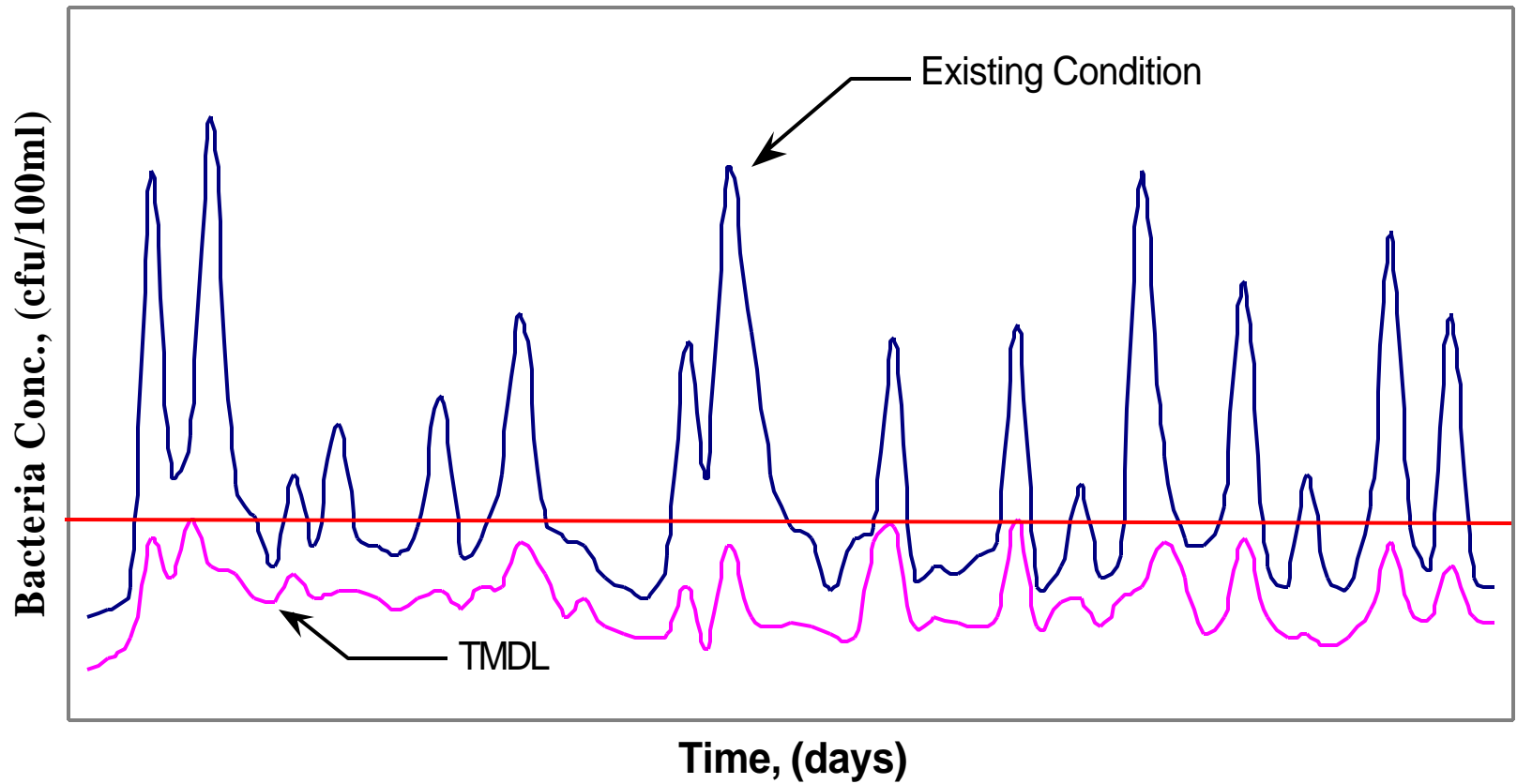
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Determine waste load and load allocations along with margin of safety for a reduction scenario that meets WQS

- Develop load reduction scenarios
- Model scenarios
- Select practical scenario(s) that meets WQS



# Allocation





# Aquatic Life TMDL Development

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Aquatic life impairments are detected through the assessment of a stream's macro-invertebrate community (Rapid Bioassessment Protocol, RBP)

- Stressor identification
- Reference watershed selection
- Endpoint analysis
- Source assessment
- Modeling
- Allocation





# DO Deficit in Thermally Stratified Lakes

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Step 1: Establish lake/reservoir stratification and location of thermocline

Step 2: Apply DO criteria

Step 3: Apply trophic state indices (TSI)

Step 4: Evaluate fish kill data



# Naturally Occurring Low DO & pH in Free-flowing Streams

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Question 1: Are wetlands present?

Question 2: Are there excessive levels of nutrients?

Question 3: Does DO vary seasonally?

Question 4: Is there other evidence of human impacts that warrant development of a TMDL?



# Contact Information:

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Byron Petrauskas, MapTech

1715 Pratt Drive - Suite 3200

Blacksburg, VA 24060

Voice: (540) 961-7864

Fax: (540) 961-6392

E-mail: [bpetrauskas@maptech-inc.com](mailto:bpetrauskas@maptech-inc.com)

Web: [www.maptech-inc.com](http://www.maptech-inc.com)

